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COMMITTEE OF EXPERTS ON THE TRANSPORT
OF DANGEROUS GOODS

REPORT OF THE COMMITTEE OF EXPERTS ON ITS SEVENTEENTH SESSION
(7-16 December 1992)

Addendum 4

Annex 5: Amendments to Chapters 9, 10 and 16 of the Recommendations on the Transport of Dangerous Goods (refer to document ST/SG/AC.10/1/Rev.7).

GE.93-20333

CHAPTER 9 - GENERAL RECOMMENDATIONS ON PACKING

Paragraph

9.1.2 (a) Amend to read :

"(a) packages containing radioactive material, which should comply with the Regulations of the International Atomic Energy Agency (IAEA), except that :

(i) radioactive material possessing other dangerous properties (subsidiary risks) should also comply with special provision 172; and

(ii) low specific activity (LSA) material and surface contaminated objects (SCO) may be carried in certain packagings defined in these Recommendations provided that the supplementary provisions set out in the IAEA Regulations are also met."

9.1.6 Amend the text in parenthesis to read as follows:

"(except 9.3.3, 9.3.9 to 9.3.12 and 9.3.15)".

9.1.9 Transfer to 9.3.13 (existing "9.3.13" to be renumbered as "9.3.15").

9.2.1 Add a second sentence to the definition for '<u>Boxes</u>' in 9.2.1 :

"Small holes for purposes such as ease of handling or opening, or to meet classification requirements are permitted as long as they do not compromise the integrity of the packaging during transport;"

Amend the first two lines of the definition for reconditioned packagings to read: "<u>Reconditioned packagings</u> include metal drums that are: ..."

Amend the definition for reused packages as follows:

"<u>Reused packagings</u> are packagings to be refilled which have been examined and found free of defects affecting the ability to withstand the performance tests: the term includes those which are ...." (remainder unchanged).

Paragraph

9.2.1
(cont'd)

Add new definitions:

"Remanufactured packagings include metal drums that:

(i) are produced as a UN type from a non-UN type;
(ii) are converted from one UN type to another UN type; or
(iii) undergo the replacement of integral structural components (such as non-removable heads).

Remanufactured drums are subject to the same requirements of this chapter that apply to a new drum of the same type."

"Siftproof packagings are packagings impermeable to dry contents including fine solid material produced during transport."

9.3.1 Add the words 'by vibration or' so that it reads as follows:

"**9.3.1** Dangerous goods should be packed in packagings of good quality. These should be constructed and closed so as to prevent the package as prepared for transport from any leakage which might be caused under normal conditions of transport, by vibration, or by changes in temperature, humidity or pressure (resulting from altitude, for example). No harmful quantity of a dangerous substance should adhere to the outside of packages. These provisions apply both to new and to reused packagings."

9.3.4.1 Amend paragraph 9.3.4.1 to read:

"**9.3.4.1** For air transport packagings intended to contain liquids should also be capable of withstanding a pressure differential without leakage as specified in the international regulations for air transport."

9.3.6 Amend 9.3.6 to read as follows:

"**9.3.6** Dangerous goods should not be packed together in the same outer packaging with dangerous or other goods if they react dangerously with each other and cause:

(a) combustion and/or evolution of considerable heat;
(b) evolution of flammable, toxic or asphyxiant gases;
(c) the formation of corrosive substances; or
(d) the formation of unstable substances."

Paragraph

9.3.9 Amend the beginning of 9.3.9 as follows:

"**9.3.9** New, remanufactured, reused or reconditioned packagings should be capable of passing the tests prescribed in 9.7 ...."

9.3.10 Add at the end of the paragraph:

"Examples of required marked test pressures calculated as in 9.3.10 (c)

UN No.	Name	Class	Packing Group	V_{p55} (kPa)	V_{p55} x 1.5 (kPa)	(V_{p55} x 1.5) minus 100 (kPa)	Required minimum test pressure (gauge) under Para 9.7.5.4(c) (kPa)	Minium test pressure (gauge) to be marked on the packaging (kPa)
2056	Tetrahydrofuran	3	II	70	105	5	100	100
2247	n-Decane	3	III	1.4	2.1	-97.9	100	100
1593	Dichloromethane	6.1	III	164	246	146	146	150
1155	Diethyl ether	3	I	199	299	199	199	250

NOTE 1: For pure liquids the vapour pressure at 55 °C (V_{p55}) can often be obtained from scientific tables.

NOTE 2: The maximum vapour pressures 9.3.10 (b) and (c) refer to the basis of the formula.

NOTE 3: The table refers to the use of 9.3.10 (c) only, which means that the marked test pressure should exceed 1.5 times the vapour pressure at 55 °C less 100 kPa. When, for example, the test pressure for n-decane is determined according to 9.7.5.4 (a), the minimum marked test pressure may be lower.

NOTE 4: For diethyl ether the required minimum test pressure under 9.7.5.5 is 250 kPa."

9.3.12 Replace the first sentence with the following:

"**9.3.12** Every packaging intended to contain liquids should successfully undergo a suitable leakproofness test, and be capable of meeting the appropriate test level indicated in 9.7.4.3;

(a) before it is first used for transport;

(b) after remanufacturing or reconditioning, before it is re-used for transport.

Paragraph

9.3.12 (cont'd) For this test, packagings need not have their own closures fitted."

Last subparagraph of 9.3.12 remains unchanged.

9.3.13 Insert the paragraph previously numbered 9.1.9 and renumber existing "9.3.13" as "9.3.15".

9.3.14 (new) Add a new paragraph as follows:

"**9.3.14.** The packagings should be manufactured and tested under a quality assurance programme which satisfies the competent authority in order to ensure that each manufactured packaging meets the requirements of this chapter."

9.4.1 In the second and sixth lines, replace the word "type" by "kind".

9.4.4 In the last line, replace "9.3.13" by "9.3.15".

9.4.5 In the first line, replace the word "types" by "kinds".

9.4.7 In the first line, replace the word "types" by "kinds".

In the heading of the left column of the table, replace the word "type" by "Kind".

Amend the entries for steel and aluminium boxes in the table as follows:

"4. Boxes	A. Steel	4A	9.6.13
	B. Aluminium	4B	9.6.13"

9.5.1 Amend paragraph 9.5.1 to read as follows:

"**9.5.1** Each packaging intended for use according to these recommendations should bear markings which are durable, legible and placed in a location and of such a size relative to the packaging as to be readily visible. For packages with a gross mass of more than 30 kg, the markings or a duplicate thereof should appear on the top or on a side of the packaging. Letters, numerals and symbols should be at least 12 mm high, except for packagings of 30 litres or 30 kg capacity or less, when they should be at least 6 mm in height and for packagings of 5 litres or 5 kg or less when they should be of an appropriate size.

The marking should show: ....."

9.5.1 (a) Amend the word "must" to "should".

Paragraph

9.5.1 (b) Delete "number".

9.5.1 (d) Amend paragraph 9.5.1 (d) to read as follows:

"(d) Either the letter "S" denoting that the packaging is intended for the transport of solids or inner packagings or, for packagings (other than combination packagings) intended to contain liquids, the hydraulic test pressure which the packaging was shown to withstand in kPa rounded down to the nearest 10 kPa;"

9.5.2 Amend section 9.5.2 to read as follows:

"**9.5.2** Every reusable packaging liable to undergo a reconditioning process which might obliterate the packaging markings should bear the marks indicated in 9.5.1 (a) to (e) in a permanent form. Marks are permanent if they are able to withstand the reconditioning process (e.g. embossed). For packagings other than metal drums of a capacity greater than 100 litres, these permanent marks may replace the corresponding durable markings prescribed in 9.5.1.

9.5.2.1 In addition to the durable markings prescribed in 9.5.1, every new metal drum of a capacity greater than 100 litres should bear the marks described in 9.5.1 (a) to (e) on the bottom, with an indication of the nominal thickness of at least the metal used in the body (in mm, to 0.1 mm), in permanent form (e.g. embossed). When the nominal thickness of either head of a metal drum is thinner than that of the body, the nominal thicknesses of the top head, body, and bottom head should be marked on the bottom in permanent form (e.g. embossed), for example '1.0-1.2-1.0' or '0.9-1.0-1.0'. Nominal thicknesses of metal should be determined according to the appropriate ISO standard, for example ISO 3574:1986 for steel drums. The marks indicated in 9.5.1 (f) and (g) should not be applied in a permanent form (e.g. embossed) except as provided in 9.5.2.3.

9.5.2.2 For remanufactured metal drums, if there is no change to the packaging type and no replacement or removal of integral structural components, the required markings need not be permanent (e.g. embossed). Every other remanufactured metal drum should bear the markings in 9.5.1 (a) to (e) in a permanent form (e.g. embossed) on the top head or side.

9.5.2.3 Metal drums made from materials (e.g. stainless steel) designed to be reused repeatedly may bear the markings indicated in 9.5.1 (f) and (g) in a permanent form (e.g. embossed)."

9.5.3 Second sentence: amend the word "must" to "should".

Paragraph

9.5.5 Replace the present 9.5.5 by the following text:

"**9.5.5** When, after reconditioning, the markings required by 9.5.1 (a) to (d) no longer appear on the top head or the side of a metal drum, the reconditioner also should apply them in a durable form followed by 9.5.4 (h), (i) and (j). These markings should not identify a greater performance capability than that for which the original design type had been tested and marked."

9.5.6 In paragraph 9.5.6, a new fifth example should be added to read as follows:

"

	1A2/Y/100/91 USA/MM5	as in 9.5.1 (a),(b),(c),(d) and (e) as in 9.5.1 (f) and (g)	For a remanufactured steel drum to contain liquids"

9.5.7 Delete the second example.

9.6.6.2 For "or plastics material", read "plastics or other suitable material."

9.6.8 Add a new paragraph in "9.6.8" as follows:

"**9.6.8.2** Fastenings should be resistant to vibration experienced under normal conditions of transport. End grain nailing should be avoided whenever practicable. Joins which are likely to be highly stressed should be made using clenched or annular ring nails or equivalent fastenings."

Renumber existing "9.6.8.2" and "9.6.8.3" as "9.6.8.3" and "9.6.8.4".

9.6.11.1 Replace "535 - 1976" by "535:1991".

9.6.11.2 At the end of the first sentence add: "or other suitable material." In the second sentence after "battens" and before "may be used" insert: "or other suitable material,".

9.6.11.3 Move the third sentence (with no change in the text) to a new paragraph "9.6.11.4" to read as follows:

"**9.6.11.4** Where closing is effected by gluing or taping, a water resistant adhesive should be used".

Paragraph

9.6.11.4) Renumber the existing 9.6.11.4 and 9.6.11.5 accordingly.
9.6.11.5)

9.6.13 Amend 9.6.13 to read as follows:

"Steel or aluminium boxes

4A steel
4B aluminium"

9.6.13.2 Amend the first sentence to read as follows:

"**9.6.13.2** Boxes should be lined with fibreboard or felt packing pieces or should have an inner liner or coating of suitable material, as required".

9.6.17.2 Amend the penultimate sentence to read as follows:

"Where there is a danger of the substance contained reacting with moisture or where it is packed damp, a waterproof ply or barrier, such as double-tarred kraft paper, plastics-coated kraft paper, plastics film bonded to the inner surface of the bag, or one or more inner plastics liners, should also be placed next to the substance."

9.7.1.7 Amend to read "Articles or inner packagings of any ...."

9.7.1.7 (a) Add the words "containing liquids" so that it reads as follows:

"(a) The outer packaging should have been successfully tested in accordance with 9.7.3 with fragile (e.g. glass) inner packagings containing liquids using the Packing Group I drop height."

9.7.1.7 (f) Add the following sentence:

"For packagings containing liquids, the absorbent material required in (e) above should be placed inside the means of containing liquid contents".

9.7.1.7 (h) At the end add the following sentence:

"Such a package mark should also contain a letter "V" as described in 9.4.4."

9.7.1.10 Add a new 9.7.1.10 as follows:

"**9.7.1.10** Provided the validity of the test results is not affected and with the approval of the competent authority, several tests may be made on one sample."

Paragraph

9.7.2.1 Amend by adding "maximum" before the word "capacity" in the second sentence.

9.7.3.1 Amend by adding the following sentence at the end of the paragraph:

"Where more than one orientation is possible for a given drop test, the orientation most likely to result in failure of the packaging should be used."

9.7.3.2 Amend 9.7.3.2 to read as follows:

"**9.7.3.2** Special preparation of test samples for the drop test

The temperature of the test sample and its contents should be reduced to -18°C or lower for the following packagings:

(a) plastics drums (see 9.6.7);
(b) plastics jerricans (see 9.6.7);
(c) plastics boxes other than expanded polystyrene boxes (see 9.6.12);
(d) composite packagings (plastics material) (see 9.6.18);
(e) combination packagings with plastics inner packagings;
(f) textile bags with inner plastics liner (see 9.6.14);
(g) woven plastics bags (see 9.6.15); and
(h) plastics film bags (see 9.6.16).

Where test samples are prepared in this way, the conditioning in 9.7.2.3 may be waived. Test liquids should be kept in the liquid state by the addition of anti-freeze if necessary."

9.7.4.3 Amend the paragraph to read as follows:

"**9.7.4.3** Test method and pressure to be applied: the packagings including their closures should be restrained under water for 5 minutes while an internal air pressure is applied, the method of restraint should not affect the results of the test.

The air pressure (gauge) to be applied should be:

Packing Group I	Packing Group II	Packing Group III
Not less than 30 kPa (0.3 bar)	Not less than 20 kPa (0.2 bar)	Not less than 20 kPa (0.2 bar)

Other methods at least equally effective may be used."

Paragraph

9.7.4.4 Delete this paragraph. Renumber existing "9.7.4.5" as "9.7.4.4".

9.7.5.1 Amend to read as follows:

"**9.7.5.1** Packagings to be tested: the internal pressure (hydraulic) test should be carried out on all design types of metal, plastics and composite packagings intended to contain liquids. This test is not required for inner packagings of combination packagings."

9.7.6 Amend to read as follows:

"**9.7.6** All design types of packagings other than bags should be subject to a stacking test."

9.7.8 (new) Add a new section 9.7.8 as follows:

"**9.7.8 Test Report**

9.7.8.1 A test report containing at least the following particulars should be drawn up and should be available to the users of the packaging:

1. Name and address of the test facility;
2. Name and address of applicant (where appropriate);
3. A unique test report identification;
4. Date of the test report;
5. Manufacturer of the packaging;
6. Description of the packaging design type (e.g. dimensions, materials, closures, thickness, etc), including method of manufacture (e.g. blow moulding) and which may include drawing(s) and/or photograph(s);
7. Maximum capacity;
8. Characteristics of test contents, e.g. viscosity and relative density for liquids and particle size for solids;
9. Test descriptions and results;
10. The test report should be signed with the name and status of the signatory.

9.7.8.2 The test report should contain statements that the packaging prepared as for transport was tested in accordance with the appropriate provisions of Chapter 9 and that the use of other packaging methods or components may render it invalid. A copy of the test report should be available to the competent authority."

9.8.1 In the first sentence, replace "50°C" by "55°C (50°C if the liquid phase does not exceed 95% of the capacity of the receptacle at 50°C)".

CHAPTER 10 - SPECIAL RECOMMENDATIONS ON PACKING FOR CLASS I

Paragraph

10.1.8) Renumber existing paragraph 10.1.8 as 10.1.9
10.1.9)

10.1.8 Insert a new paragraph as follows:

"**10.1.8** Plastics packagings should not be liable to generate or accumulate sufficient static electricity that a discharge could cause the packaged explosive to ignite or the packaged article to function."

Table 10.1

Amend as follows:

Packing method

E 2	In column 2, add:	"Bags paper, multiwall, water resistant woven plastics"
	In column 3, under Drums, add:	"steel, removable head (1A2)"
E 4 (a)	In column 3, under Boxes, add:	"natural wood, ordinary (4C1) steel (4A)"
E 6 (a) (ii)	In column 2, under "Intermediate, bags" add:	"plastics"
E 8	In column 3, under Boxes, add:	"steel (4A) aluminium (4B) plastics, solid (4H2)"
	In column 3, under Drums, add:	"steel, removable head (1A2) aluminium, removable head (1B2)"
E 12	In column 3, under Boxes, add:	"steel (4A) aluminium (4B) plastics, solid (4H2)"
	In column 3, under Drums, add:	"aluminium, removable head (1B2)"

Packing method

E 13 (a)	In column 2, under Bags, add:	"woven plastics paper, multiwall, water resistant"
E 13 (b)	In column 2, under Bags, add:	"woven plastics paper, multiwall, water resistant"
E 20	In column 2, under Receptacles, add:	"fibreboard"
	In column 3, under Boxes, add:	"plastics, solid (4H2)"
	and replace:	"steel, with inner liner or coating (4A2)"
	by:	"steel (4A) aluminium (4B)"
E 22 (a), (b)	In column 3, under Boxes, add:	"steel (4A)"
E 25	In column 3, under Drums, add:	"steel, removable head (1A2)"
E 26	In column 2, under Bags, add:	"paper paper, multiwall, water resistant"
E 102	In column 3, under Boxes, add:	"aluminium (4B)" "expanded plastics (4H1)"
	and replace:	"steel (4A1" and "steel, with inner liner or coating (4A2)"
	by:	"steel (4A)"
	In column 3, under Drums, add:	"aluminium, removable head (1B2)"
	In column 4, add:	"49"
E 104	In column 3, under Boxes, add:	"aluminium (4B)"
	and replace:	"steel, with inner liner or coating(4A2)"
	by:	"steel (4A)"
	In column 4, replace:	"54" by "57"
E 105	In column 3, under Boxes, add:	"aluminium (4B)"
	and replace:	"steel, with inner liner or coating (4A2)"
	by:	"steel (4A)"
	In column 4, delete:	"54"
E 105A	In column 3, under Boxes, add:	"aluminium (4B)"
	and replace:	"steel, with inner liner or coating (4A2)"
	by:	"steel (4A)"

Packing method

E 106	In column 3, under Boxes, add:	"aluminium (4B)"
	and replace:	"steel (4A1)"
	by:	"steel (4A)"
	In column 3, add:	"Drums steel, removable head (1A2)"
E 107 (a), (b)	In column 3, under Boxes, add:	"steel (4A) aluminium (4B)"
E 107 (a)	In column 4, add:	"57"
E 108	In column 3, under Boxes, add:	"aluminium (4B)"
	and replace:	"steel (4A1)"
	by:	"steel (4A)"
E 109	In column 2, under Receptacles, add:	"paper fibreboard"
	In column 3, under Boxes, add:	"aluminium (4B)"
	and replace:	"steel, with inner liner or coating (4A2)"
	by:	"steel (4A)"
E 112	In column 3, under Boxes, add:	"aluminium (4B)"
	and replace:	"steel (4A1)" and "steel, with inner liner or coating (4A2)"
	by:	"steel (4A)"
E 113	In column 3, under Boxes, add:	"natural wood, with sift-proof walls (4C2) steel (4A)"
E 114	In column 3, under Boxes, add:	"aluminium (4B)" "natural wood, with sift-proof walls (4C2)"
	and replace:	"steel, with inner liner or coating (4A2)"
	by:	"steel (4A)"
	In column 3, add:	"Drums steel, removable head (1A2)"
E 115	In column 3, under Boxes, add:	"aluminium (4B)" "expanded plastics (4H1)" "plastics, solid (4H2)"
	and replace:	"steel, with inner liner or coating (4A2)"
	by:	"steel (4A)"

Packing method

E 116	In column 3, under boxes, add:	"aluminium (4B)"
	and replace:	"steel, (4A1)"
	by:	"steel (4A)"
E 117	In column 2 insert "not necessary" instead of the existing wording.	
	In column 3, under Boxes, add:	"aluminium (4B)" "fibreboard (4G)"
	and replace:	"steel, with inner liner or coating (4A2)"
	by:	"steel (4A)"
	In column 3, add:	"Drums steel, removable head (1A2)"
	In column 4, add:	"57"
E 119	In column 3, under Boxes, add:	"aluminium (4B)" "fibreboard (4G)"
	and replace:	"steel (4A1)" and "steel, with inner liner or coating (4A2)"
	by:	"steel (4A)"
	In column 3, under Drums, add:	"aluminium, removable head(1B2)"
E 121	In column 3, under Boxes, add:	"aluminium (4B)"
	and replace:	"steel, with inner liner or coating (4A2)"
	by:	"steel (4A)"
	In column 3, add:	"Drums steel, removable head (1A2) aluminium, removable head (1B2)"
	In column 4, add:	"57"
E 122	In column 3, under Boxes, add:	"aluminium (4B)"
	and replace:	"steel, with inner liner or coating (4A2)"
	by:	"steel (4A)"
E 123	In column 2, under Receptacles, add:	"plastics"
	In column 3, under Boxes, add:	"aluminium (4B)" "expanded plastics (4H1)"
	and replace:	"steel (4A1)"
	by:	"steel (4A)"
	In column 4, delete.	"29"

Packing method

E 124	In column 2, add:	"Receptacles metal"
	In column 3, under Drums, add:	"steel, removable head (1A2) aluminium, removable head (1B2)"
	In column 3,under Boxes, add:	"aluminium (4B)"
E 125	In column 3, under Boxes, add:	"steel (4A) aluminium (4B)"
	In column 3, add:	"Drums steel, removable head (1A2) aluminium, removable head (1B2)"
E 126	In column 3, under Boxes, add:	"steel (4A) aluminium (4B)"
	In column 3, add:	"Drums steel, removable head (1A2) aluminium, removable head (1B2)"
E 127	In column 2, under Receptacles, add:	"metal plastics"
	In column 3, under Boxes, add:	"aluminium (4B)"
		"fibreboard (4G)"
	and replace :	"steel, with inner liner or coating (4A2)"
	by:	"steel (4A)"
E 128	In column 3, under Boxes, add:	"aluminium (4B)"
		"fibreboard (4G)"
	and replace :	"steel (4A1)"
	by:	"steel (4A)"
E 130	In column 2, under Receptacles, add:	"metal"
	In column 3, under Boxes, add:	"steel (4A) aluminium (4B) expanded plastics (4H1)"
	In column 3, under Drums, add:	"steel, removable head (1A2) aluminium, removable head (1B2)"

Packing method

E 133	In column 3, under Boxes , add:	"aluminium (4B)"
		"expanded plastics (4H1)"
	and replace:	"steel (4A1)"
	by:	"steel (4A)"
	In column 3, under Drums, add:	"steel, removable head (1A2) aluminium, removable head (1B2)"
E 134	In column 3, under Boxes , add:	"aluminium (4B)"
	and replace:	"steel (4A1)"
	by:	"steel (4A)"
	In column 3, add:	"Drums steel, removable head (1A2) aluminium, removable head (1B2)"
E 136	In column 3, under Boxes, add:	"aluminium (4B)"
		"plastics, solid (4H2)"
	and replace:	"steel, with inner liner or coating (4A2)"
	by:	"steel (4A)"
	In column 3, under Drums, add:	"steel, removable head (1A2) aluminium, removable head (1B2)"
	In column 4, add:	"57"
E 137	In column 3, under Boxes, add:	"aluminium (4B)"
	and replace:	"steel (4A1)"
	by:	"steel (4A)"
	In column 3, add:	"Drums steel, removable head (1A2)"
E 138	In column 3, under Boxes, add:	"aluminium (4B)"
		"plastics, solid (4H2)"
	and replace:	"steel (4A1)"
	by:	"steel (4A)"
E 139	In column 2, under Receptacles, add:	"fibreboard"
	In column 3, under Boxes, add:	"aluminium (4B)"
	and replace:	"steel, with inner liner or coating (4A2)"
	by:	"steel (4A)"
	In column 3, add:	"Drums steel, removable head (1A2)"

Packing method

E 140	In column 3, under Boxes, add:	"aluminium (4B)"
	and replace:	"steel, with inner liner or coating (4A2)"
	by:	"steel (4A)"
E 141	In column 3, under Boxes, add:	"aluminium (4B)"
	and replace:	"steel, with inner liner or coating (4A2)"
	by:	"steel (4A)"
E 142	In column 3, under Boxes, add:	"aluminium (4B)"
	and replace:	"steel, with inner liner or coating (4A2)"
	by:	"steel (4A)"
E 143	In column 3, under Boxes, add:	"aluminium (4B)"
	and replace:	"steel (4A1)"
	by:	"steel (4A)"
E 145	In column 3, under Boxes, add:	"aluminium (4B)"
	and replace:	"steel, with inner liner or coating (4A2)"
	by:	"steel (4A)"
E 149	In column 3, under Boxes, add:	"aluminium (4B)"
	and replace:	"steel, (4A1)"
	by:	"steel (4A)"
E 150	In column 2, under Boxes, add:	"metal"
	In column 3, under Boxes, add:	"aluminium (4B)"
		"expanded plastics (4H1)"
		"plastics, solid (4H2)"
	and replace:	"steel (4A1)"
	by:	"steel (4A)"
	In column 3, under Drums, add:	"steel, removable head (1A2) aluminium, removable head (1B2) plastics, removable head (1H2)"
E 151	In column 3, under Boxes, add:	"aluminium (4B)"
	and replace:	"steel (4A1)"
	by:	"steel (4A)"
E 153	In column 3, under Boxes, add:	"aluminium (4B)"
	and replace:	"steel (4A1)"
	by:	"steel (4A)"

Packing method

E 156	In column 3, under Boxes, add:	"aluminium (4B)"
	and replace:	"steel (4A1)" and "steel, inner liner or coating (4A2)"
	by:	"steel (4A)"
E 157	In column 3, under Boxes, add:	"aluminium (4B)"
	and replace:	"steel (4A1)"
	by:	"steel (4A)"
E 158 (a), (b), (c)	In column 4 , delete:	"54"

Add a new packing method E 159 as follows:

"

1	2	3	4
E 159 (a)	Receptacles plastics <u>Intermediate</u> Bags plastics, in metal cans	Boxes natural wood, ordinary (4C1) plywood (4D) reconstituted wood (4F)	58
(b)	Receptacles plastics <u>Intermediate</u> Drums metal	Drums steel, removable head (1A2) aluminium, removable head (1B2)	59

"

Table 10.2

Delete Particular Packing Requirements 29 and 54.

Add new Particular Packing Requirements as follows:

"57. Liner or inner coating required for metal outer packagings (e.g. 4A, 4B, 1A2, 1B2) unless another means such as the use of an inner packaging or cushioning material protects the explosive substance from contact with the metal outer packaging during normal conditions of transport."

"58. Plastics receptacles should have taped screw cap closures and be of not more than 5 litres capacity each. Each receptacle should be contained within an intermediate packaging. Each plastics bag should be surrounded on all sides with at least 50 mm of non-combustible absorbent cushioning material; metal cans in the outer box should also be cushioned from each other in all directions. Net mass of propellant should be limited to 30 kg for each package."

"59. The intermediate drum should be surrounded on all sides with at least 50 mm of non-combustible absorbent cushioning material. A composite packaging consisting of a plastics receptacle in a metal drum may be used instead of the inner and intermediate packagings. The net volume of propellant in each package should not exceed 120 litres."

CHAPTER 16 - RECOMMENDATIONS ON INTERMEDIATE BULK CONTAINERS (IBCs)

Paragraph

16.1.1.1 Amend first sentence to read:

"The provisions of these Recommendations apply to IBCs intended for the transport of certain dangerous goods".

16.1.2.1 Amend beginning to read:

"**16.1.2.1** Definitions

"Intermediate Bulk Containers" (IBCs) are rigid, semi-rigid or flexible portable packagings, other than those specified in Chapter 9, that:

Paragraph

(a) have a capacity of:

(i) not more than 3.0 m^3 (3,000 litres) for solids and liquids of Packing Groups II and III;

(ii) not more than 1.5 m^3 for solids of Packing Group I when packed in flexible, rigid plastics, composite, fibreboard and wooden IBCs;

(iii) not more than 3.0 m^3 for solids of Packing Group I when packed in metal IBCs;"

Subparagraphs (b) and (c) remain unchanged.

16.1.4.1.1 Delete the word "designed,".

16.1.4.2.3 Drop testing: Amend the text under (b) to read:

"(b) where the substances to be carried have a relative density exceeding 1.2, the drop height should be calculated on the basis of the relative density (d) of the substance to be carried rounded up to the first decimal as follows:

Packing Group I	Packing Group II	Packing Group III
d x 1.5 m	d x 1.0 m	d x 0.67 m

"

16.1.4.2.4 Amend to read as follows:

"Every IBC intended to contain liquids should successfully undergo a suitable leakproofness test, and be capable of meeting the appropriate level prescribed under the relevant sections for the various types of IBCs:

(a) before it is first used for transport;
(b) after any repair, before it is reused for transport.

For this test the IBC need not have its closures fitted. The inner receptacle of composite IBCs may be tested without the outer packaging provided the test results are not affected."

16.1.4.3.1 After "certificate" add "and mark (as in 16.1.5)".

Paragraph

16.1.4.3.2 Replace the existing text with the following:

"A test report containing at least the following particulars should be drawn up and should be available to the users of the IBC:

1. Name and address of the test facility;
2. Name and address of applicant (where appropriate);
3. A unique test report identification;
4. Date of the test report;
5. Manufacturer of the IBC;
6. Description of the IBC design type (e.g. dimensions, materials, closures, thickness, etc.) including method of manufacture (e.g. blow moulding) and which may include drawing(s) and/or photograph(s);
7. Maximum capacity;
8. Characteristics of test contents, e.g. viscosity and relative density for liquids and particle size for solids;
9. Test descriptions and results;
10. The test report should be signed with the name and status of the signatory."

16.1.4.3.3 Add:

"The test report should contain statements that the IBC prepared as for transport was tested in accordance with the appropriate provisions of Chapter 16 and that the use of other packaging methods or components may render it invalid. A copy of the test report should be available to the competent authority."

16.1.5.1 Primary marking: Amend as follows:

(b) Delete "number";

Amend (c) to read:

"(c) A capital letter designating the packing group(s) for which the design type has been approved:

X for packing groups I, II and III (IBCs for solids only);
Y for packing groups II and III;
Z for packing group III only."

Paragraph

16.1.5.1 Add the following example of markings:

"

11C/X/01 93 S/Aurigny/9876	For a wooden IBC for solids with an inner liner and authorized for Packing Group I solids
3000/910	

"

16.1.6.1 In the last sentence, replace the word "reconditioned" by "repaired".

16.2.2.2 Amend the definition to read:

"Body means the receptacle proper, including openings and their closures, but does not include service equipment (see 16.2.2.4);"

16.2.6.3 Replace the reference to "16.2.6.2" by a reference to "16.2.8.4".

16.2.8.4.1 Delete the phrase "and as an initial".

16.2.8.4.2 Delete the word "initial".

16.2.8.5.4 Amend to read:

"**16.2.8.5.4** Pressures to be applied

(a) for IBCs of types 21A, 21B, and 21N, for Packing Group I solids, a 250 kPa (2.5 bar) gauge pressure;

(b) for IBCs of types 21A, 21B, 21N, 31A, 31B, and 31N, for Packing Groups II or III substances, a 200 kPa (2 bar) gauge pressure;

(c) in addition, for IBCs of types 31A, 31B, and 31N, a 65 kPa (0.65 bar) gauge pressure. This test should be performed before the 2 bar test."

16.2.8.5.5 Amend to read:

"**16.2.8.5.5** Criteria for passing test(s):

For IBCs of types 21A, 21B, 21N, 31A, 31B, and 31N, when subjected to the test pressure specified in 16.2.8.5.4 (a) or (b): no leakage.

For IBCs of types 31A, 31B, and 31N, when subjected to the test pressure specified in 16.2.8.5.4 (c): neither permanent deformation which would render the IBC unsafe for transport, nor leakage."

Paragraph

16.2.8.6.3
and
16.2.8.6.4 Amend to read:

"**16.2.8.6.3** Method of testing

The IBC should be dropped on to a rigid, non-resilient, smooth, flat and horizontal surface, in such a manner as to ensure that the point of impact is that part of the base of the IBC considered to be the most vulnerable. An IBC of 0.45 m^3 or less capacity should also be subject to a drop test on the most vulnerable part other than the part of the base of the IBC tested in the first drop. The same or different IBCs may be used for each drop.

16.2.8.6.4 Drop height

Packing Group I	Packing Group II	Packing Group III
1.8 m	1.2 m	0.8 m

"

16.3.2.1 Amend to read as follows:

"**16.3.2.1** Flexible IBCs consist of a body constituted of film, woven fabric or any other flexible material or combinations thereof, and if necessary an inner coating or liner, together with any appropriate service equipment and handling devices."

16.3.2.2 Amend the definition of "body" to read:

"Body means the receptacle proper, including openings and their closures, but does not include service equipment (see 16.3.2.4)."

16.3.2.7 Add the following new paragraph:
(new)

"**16.3.2.7** Liner means a separate tube or bag inserted in the body but not forming an integral part of it, including the closures of its openings."

16.3.3.9 Add the following new paragraph :
(new)

"**16.3.3.9** The liner should be made of a suitable material. The strength of the material used and the construction of the liner should be appropriate to the capacity of the IBC and the intended use. Joins and closures should be sift proof and capable of withstanding pressures and impacts liable to occur under normal conditions of handling and transport."

Paragraph

16.3.6.4.3 Add a second sentence to read as follows:

"An IBC of 0.45 m^3 or less capacity should also be dropped on the most vulnerable side."

16.3.6.4.4 Amend to read:

"**16.3.6.4.4** Drop height

Packing Group I	Packing Group II	Packing Group III
1.8 m	1.2 m	0.8 m

"

16.3.6.5.4 Amend to read:

"**16.3.6.5.4** Topple height

Packing Group I	Packing Group II	Packing Group III
1.8 m	1.2 m	0.8 m

"

16.4.2.2 Amend the definition of "body" to read :

"Body means the receptacle proper, including openings and their closures, but does not include service equipment (see 16.4.2.3)."

16.4.6.3 Replace the reference to "16.4.6.2" by a reference to "16.4.9.4".

16.4.9.4.1 Delete the phrase "and as an initial".

16.4.9.6.3
and
16.4.9.6.4 Amend to read:

"**16.4.9.6.3** Method of testing

The IBC should be dropped onto a rigid, non-resilient, smooth, flat and horizontal surface, in such a manner as to ensure that the point of impact is that part of the base of the IBC considered to be the most vulnerable. An IBC of 0.45 m^3 or less capacity should also be dropped flat on a side, flat on the top and on a corner. The same or different IBCs may be used for each drop.

Paragraph

16.4.9.6.4 Drop height

Packing Group I	Packing Group II	Packing Group III
1.8 m	1.2 m	0.8 m

"

16.5.3.3.7 Replace "535 - 1976" by "535:1991".

16.5.3.3.8 Insert the word "outer" between "fibreboard" and "casings."

16.5.3.3.9 Delete the words "body of" so that the text reads:

"Manufacturing joins in the fibreboard outer casing should be taped, ...(remainder unchanged)".

16.5.6.3 Replace the reference to "16.5.6.2" by a reference to "16.5.9.4".

16.5.9.4.1 Delete the phrase "and as an initial".

16.5.9.6.3
and
16.5.9.6.4 Amend to read:

"**16.5.9.6.3** Method of testing

The IBC should be dropped on its base onto a rigid, non-resilient, smooth, flat and horizontal surface, in such a manner as to ensure that the point of impact is that part of the base of the IBC considered to be the most vulnerable. An IBC of 0.45 m^3 or less capacity should also be dropped flat on a side, flat on the top and on a corner. The same or different IBCs may be used for each drop.

16.5.9.6.4 Drop height

Packing Group I	Packing Group II	Packing Group III
1.8 m	1.2 m	0.8 m

"

16.6.2.2 Amend the definition of "body" to read:

"Body means the receptacle proper, including openings and their closures, but does not include service equipment (see 16.6.2.4)."

16.6.3.2.1 Replace "535-1976" by "535:1991"

Paragraph

16.6.6.3.3
and
16.6.6.3.4 Amend to read:

"**16.6.6.3.3** Method of testing

The IBC should be dropped onto a rigid, non-resilient, smooth, flat and horizontal surface, in such a manner as to ensure that the point of impact is that part of the base of the IBC considered to be the most vulnerable. An IBC of 0.45 m^3 or less capacity should also be dropped flat on a side, flat on the top and on a corner. The same or different IBCs may be used for each drop.

16.6.6.3.4 Drop height

Packing Group I	Packing Group II	Packing Group III
1.8 m	1.2 m	0.8 m

16.7.2.2 Amend the definition of "body" to read:

"Body means the receptacle proper, including openings and their closures, but does not include service equipment (see 16.7.2.4);"

16.7.6.3.3
and
16.7.6.3.4 Amend to read:

"**16.7.6.3.3** Method of testing

The IBC should be dropped onto a rigid, non-resilient, smooth, flat and horizontal surface, in such a manner as to ensure that the point of impact is that part of the base of the IBC considered to be the most vulnerable. An IBC of 0.45 m^3 or less capacity should also be dropped flat on a side, flat on the top and on a corner. The same or different IBCs may be used for each drop.

16.7.6.3.4 Drop height

Packing Group I	Packing Group II	Packing Group III
1.8 m	1.2 m	0.8 m